FINAL MEETING SUMMARY

HANFORD ADVISORY BOARD
TANK WASTE COMMITTEE / BUDGETS AND CONTRACTS COMMITTEE MEETING
August 10, 2006
Richland, WA

Topics in this Meeting Summary

This is only a summary of issues and actions in this meeting. It may not represent the fullness of ideas discussed or opinions given, and should not be used as a substitute for actual public involvement or public comment on any particular topic unless specifically identified as such.

Welcome and Introductions

Todd Martin, Hanford Advisory Board (HAB, or the Board) Chair, welcomed the committee and introductions were made. Rick Jansons, Tank Waste Committee (TWC) Chair, and Paige Knight, TWC Vice-Chair, were unable to attend. Changes were submitted for the summary of the joint TWC and Budgets and Contracts Committee meeting in June; the committee will review the summary again and then it will be finalized.

Double Shell Tank (DST) Integrity Report and Single Shell Tank (SST) Corrosion

Rob Davis presented a preliminary Issue Manager overview of the DST Integrity report. The report is supposed to summarize what has been happening since 1999. Rob said he was disappointed with the quality of much of the report; it should have identified all of tank components but instead only presented a few sketches. He said the report referenced other documents but it was difficult to read because it was not an all-encompassing review and lacked design detail.

Rob thought the scope of the examination of the tanks was too limited, examining only 8% of the circumference and less than 1.6% of the entire vessel surface area. He also questioned how other data (such as end-of-life and load) was defined and calculated for the report. Rob said no two tanks are alike and each should be treated uniquely.
There were six primary areas about which Rob thought the committee and Board should challenge the report:

1. Data quality
    a. Insufficient information (an average value was used to compute tank life; the worst case should have been used to calculate tank life).
    b. Complete data summaries.
    c. Accuracy, significant numbers, distributions. (Did water affect the accuracy of the data?)
    d. Drawings, boundaries, and systems on each tank (use "as built" drawings).
    e. Clear listing of out of service. (There is no list of what is in service and what is out.)
    f. Clean up the many errors in the document

2. Data analysis
    a. Why should tanks be allowed to thin beyond the minimum design thickness? What are the red flags? Why should a tank be allowed to leak before it is taken out of service?
    b. Why are seismic loads not considered in the end of life calculations?
    c. Why are tank nozzles not considered and stress evaluations performed? (The nozzle has to shift exactly the same or it will cause stress.)
    d. Calculations and references (some calculations were not referenced).

3. The inspection methodology and coverage
    a. Only the minimum scope was performed – needs to be expanded.
    b. Degradation is confirmed and an additional mechanism identified.
    c. Expanded inspection matrix should be required (e.g., connected corrosion pits).
    d. Liquid/vapor interface coverage should be increased because the exact tank level is not static. (Rob said Ecology should challenge DOE to expand the matrix.)

4. Corrosion monitoring
    a. New technological issues – Rob said often corrosion coupons work better and more reliably than electrochemical probes.
    b. Need long term monitoring (bench top and coupon studies).
    c. Need to confirm all plausible degradation mechanisms.
    d. Clearly map and illustrate all leak testing, dates, and results.

5. Correlation of data
    a. Visual inspections should be correlated to volumetric.
    b. Correlated corrosion losses to actual operating and thermal loads.
    c. Correlated tank-to-tank differences (should not lump all tanks together).
    d. Correlate tank corrosion findings to the operations.

6. Vaults and encased transfer piping
    a. Improve general understanding between encased piping and not encased.
    b. List and document results of leak testing.

c. List flushing and lay up status of piping.
d. Cathodic protection should be a priority.
e. Corrosion protection on the inside of the transfer piping.

Rob said the inspection size and frequency needs to be increased, and he proposed the committee draft advice to Ecology to challenge DOE on the issues listed above.

Dirk Dunning added four points:

- The Department of Energy (DOE) needs to find the DST initial design criteria – the design specifications and what they are designed to withstand. If the record does not exist, it needs to be recreated.
- The tanks are not an actual double shell tank system since the outer shell does not cover the top. The DST integrity report did not look at corrosion from the inside out.
- There needs to be specific end-of-life criteria.
- The DST integrity report should specifically outline how the tanks were built, their history, and the current conditions – what is known and what is unknown. The report does not identify current tank conditions.

Regulator Perspective

Jeff Lyon, Ecology, said Ecology is reviewing the report. He expects the review to be complete in the fall.

Jeff said Ecology supports many of the concerns outlined by Dirk and Rob. He said deficiencies need to be addressed before permitting, and Ecology will expect different frequencies of inspections and focus on corrosion protection and end-of-life identification. He said the end-of-life process is a concern and Ecology is working on how to predict that process better. It is difficult if design specifications are missing.

He emphasized Ecology believes permitting the system is the best tool they have to ensure a reliable DST system.

Jeff said Ecology will have a response to the report at the end of September and are looking at a draft permit for public review mid-2007, so the next few months would be a good time for the Board to comment.

Committee Discussion

- Operability and static load testing was used, not a hydro test. A hydro test tests the strength of the vessel; a static fill test looks for leaks and defects.
- *It would be amazing if there were accurate as-built drawings available; as-builts are never verified or upgraded because of the cost. What really should be done is to physically determine the lifespan of the tanks before they fail.* Rob thought they

should resist giving up on as-built drawings by saying someone lost the design specifications or that they were never there.

- *Does Ecology require seismic calculations?* Les Fort, Ecology, said seismic calculations have been done and they are looking at "fit for use" as of today. He said seismic data had not been included in life calculations; Rob thought it should be. Dirk said the report is based on past seismic standards which are not as stringent as current standards.
- *Will the document be used to determine risk?* Les said the document is not adequate enough to determine risk.
- Rob said DOE plans to use the tanks until roughly 2035 and the permit will last for about 20-25 years. He asked why the state is not permitting for a certain period of time and requiring operating controls and inspections. He said there is a balancing act – corrosion inhibitors are detrimental to glass-making, but corrosion inhibitors are needed in the tanks. He thought if the permit lasts for a certain period of time, DOE needs flexibility to use more inhibitors.
- *Permitting would lead the public and Congress to believe the double shell tanks are compliant; if they are not permitted, it sends the message that it is unacceptable to leave waste in the tanks.* Gerry Pollet said noncompliant existing facilities could not be permitted. He thought a compliance schedule would be better than a permit and thought the committee and Board should advise that. Jeff clarified that the application is for the DST system and associated ancillary equipment, and permitting means permitting to operate. Currently they are not permitted to operate. He said this is the third revision to the application and the process has been going on for about 15 years. Ecology has chosen to use a compliance schedule that is fully enforceable to compel DOE for some things they would not feel compelled to due under the Tri-Party Agreement (TPA). Permitting has better requirement definitions than the TPA.
- *Has Ecology requested more detail in the DST Integrity report?* Jeff said they were still reviewing and they are randomly selecting referenced documents to make sure they are adequately and accurately referenced.
- *The report should be an evaluation of the tanks as they are currently and corrosion should be specifically evaluated. Any advice should focus on what could be done to stabilize tanks until they are emptied.*
- *Will DST operation be included in the Tank Closure/Waste Management Environmental Impact Statement (TC&WM EIS)?* Jeff said it already is.
- Jeff reiterated that Ecology is still reviewing the report and questioned how the committee could weigh in on DST system compliance if the report is not complete. He said they could issue a compliance schedule even if they do not have all the information.
- Committee members agreed advice should say more data is needed to be compliant. Once there is compliance, a permit could be issued, but Ecology should not issue a permit until there is enough information. In addition, the committee agreed the advice should discuss how long they think the tanks will be needed and when more DSTs will have to be built. It should be event-driven, such as a functioning tank

system is needed until all waste has been vitrified. Also, there should be hard end-of-life criteria defining when work is complete. The tanks need to be replaced before they fail.

- If there is a permit, it should have a clear compliance schedule and include requirements for information missing that Rob identified. The compliance schedule should be detailed and enforceable to shows how the tanks will be compliant for the rest of the mission. Todd also thought the Board should address that Ecology is now looking at obtaining compliance through a permit rather than through TPA milestones.

Tank Leak Discrepancies

Gerry Pollet presented an overview of the Heart of America report *Recent Leaks from Hanford's High-Level Nuclear Waste Tanks: USDOE's Failure to Monitor, Report or Characterize Tank Leaks,* written by John Brodeur.

Some questions are: What is in the soil? How far and fast do contaminants spread? Does it support or undermine DOE's model for contamination spread? Are additional tanks leaking or continuing to leak?

Gerry briefly discussed single shell tanks, and an example of rapid contamination at the TY Tank Farm. He said characterizing all the tank farms is too extensive and costly. The report said there was a fifty-fold increase in contamination found in one borehole tested between tanks TY-103 and TY-105 from 1996 to 2002. Gerry said one of the tanks had a substantial release and nothing was reported, and the depth of contamination shows the source is likely a pipe or tank leak, not borehole contamination.

The report said that mobile contaminants have reached groundwater and there was a 50-times increase below the tank bottom level indicative of release between 1996 and 2002.

Gerry discussed TY-102 and said DOE has not designated it as leaking and has not acted on evidence that it is leaking. He said the data shows there is more contamination than one tank could contribute. The report said tank leak determination should be a regulatory process based on regulatory requirements, not a subjective decision by the owner and operator.

The report referenced a GAO report (1989) that said DOE does not collect sufficient data. Gerry said there is better funding now, but the question still remains if the program is actually designed to find leaks.

Gerry said problems with DOE's characterization plan include the high level cesium has to be at to trigger an investigation, and that tanks are not yet monitored for external leaks. The report also noted there are characterization discrepancies, including TY-102's leaking status.

According to the report, the next steps include obtaining adequate leak characterization data before attempting to assess environmental impacts or projecting future contaminant spread and risks. Also, estimates of Curie content of leaks should be made using the empirical characterization data. Gerry said in order to properly finish remediation or close a site, and provide appropriate post-closure monitoring of the contamination left behind, it is necessary to understand the nature and extent of the contamination in the vadose zone. The report said this should be done before attempting to determine what type of closure plans to adopt.

Gerry said he hoped the committee would be interested in hearing a full presentation from John Brodeur.

Regulator Perspective

Jeff Lyon said they reviewed the report and agree with the leak loss estimates and are becoming more involved in them. Jeff said there are milestones requiring an active characterization program. He said boreholes are very expensive and time-consuming and are not as efficient as other methods available. They are testing the use of electric resistivity to obtain underground photos. Ecology agrees it should be a regulatory-driven process.

Committee Discussion

- *Was the evidence of underreporting leaks common throughout the other tank farms?* Gerry said a Grand Junction Office report identified a leak from TY-102 and it was never followed up on. Wade Riggsbee added there is a lot of historical data, from dry wells and monitoring wells and from Grand Junction work, but it has not been used. He also said that deep migration characterization is incomplete because there are not enough boreholes, and they should be finished before the TC&WM EIS comes out.
- Dirk said that according to modeling reports, cesium does not move. If modeling is wrong, risk assessments should be corrected. He also noted how technical problems and terms (e.g., pumpable liquids vs. interstitial liquids) get distorted as they move through the chain from engineers to the press.
- Rob Davis said there is not enough corrosion information and more is needed.

The committee decided they would like a fuller discussion with DOE, the tank farm contractor, Ecology and John Brodeur about tank leaks. Pam Larsen will work with Rob Davis to help frame the discussion for the next committee meeting and ensure it is at the right technical level.

TWC and BCC Joint Committee Discussion on the Waste Treatment Plant (WTP)

The committee discussed advice drafted by Rick Jansons and Dirk Dunning.

Regulator Perspective

Suzanne Dahl, Ecology, agreed that there needs to be a comprehensive plan, specifically saying that WTP needs to stay on schedule. In addition, the second Low Activity Waste (LAW) system needs to be operational. She agreed that DOE should spend the time and money to figure out how to resolve the secondary waste problem. Ecology also believes that retrievals should not stop or slow because the WTP is delayed; the tanks are still leaking and that is not improving. There needs to be a process to keep retrievals going at a decent pace, which might mean new tanks.

Committee Discussion

- *Cost is the biggest threat to the WTP, and Congress is losing patience with added criteria and delays.* Congressional views and appropriations are critical for the next few years and the committee should stay on top of it, focusing on budgets to completion, nit just budgets year by year.
- Gerry Pollet said the huge cost, management findings, schedule, safety and quality assurance concerns have put the WTP in jeopardy. Transparency is needed and state actions should be consistent with the urgency. He said the Government Accountability Office (GAO) and Army Corp of Engineers recommendations should be used.
- *WTP is the key component at Hanford; the Board needs to keep hammering away on a fully funded WTP, and not let it drag on like it did at Savannah River.*
- *The advice should say broad regional support is needed for the path forward.*
- *The committee's past discussion was broader than just the WTP; the committee said there was no credible plan to retrieve, treat, and dispose of tank waste because of the budget and the WTP.* There is no enforceable TPA milestone that reflects a credible plan for retrieving, treating, and disposing of Hanford waste. Dick Smith added the WTP could be built but there is no plan for dealing with the secondary waste stream.
- Suzanne Dahl said there is about 3 million gallons of space after S Farm and C Farm are finished pumping. C Farm's new projected date of completion is 2016, and may take longer because the WTP will not be operational. Retrievals are taking longer and costing more than expected and DOE has run up against technical issues. Suzanne noted that after C Farm is complete, there will be about 125 single shell tanks remaining.
- Eric Olds, DOE-Office of River Protection (DOE-ORP), said CH2MHill has trained many workers that represent institutional knowledge and financial investment and they want to keep them working. Suzanne said Ecology's position is that cleanup is driven by a consent order and agreement, and Ecology does not believe that keeping continuity is as important in a cleanup that will last long after those workers have retired.
- *The path forward needs to be credible, comprehensive, and integrated, and include cost and schedule profiles.*
- *The viability of an early startup of the LAW facilities should be carefully considered.*

- *Stay aware of the ripple effect one project has on another, such as tank waste retrievals should not slow because of WTP delays.*

The committee agreed the advice should be kept at a high policy and principle level. They agreed that a credible comprehensive path forward should incorporate TPA milestones and meet the following principles:

- Act based on the risk that single shell tanks will corrode and leak.
- Act based on the risk that double shell tanks will fail.
- Retrieve all waste to the extent practicable.
- The path must show how it reflects key GAO and Army Corps of Engineer recommendations.
- The path must be transparent and documents publicly available.
- There must be a credible independent mechanism to resolve safety and QA issues in a transparent manner.

The committee also decided the advice should include a principle for an integrated completion plan with dates, which would address retrieval and treatment of all Hanford tanks.

DOE-ORP Reports

The committee had asked for an update on the WTP LAW Early Operation Evaluation, WTP/Tank Farm Integrated LAW Early Operation Evaluation, Bulk Vitrification and the Army Corps of Engineers Reports. The reports were not ready for the committee to discuss.

Regulator Perspective

Suzanne Dahl said she did not know any more about the Army Corp of Engineers report than the committee did; she heard it is a work in progress.

She attended workshops analyzing the early startup of the LAW facility, which identified it as the easiest to begin early. However, there are constraints and problems because of recycling issues. Without an entire system operational, not all contaminants would be removed: technetium and iodine would be spun out to the effluent treatment system, making the secondary waste stream worse. Tanks would be filled with recycled waste, and there would have to be a pretreatment system in new vaults in AP Tank Farms. This would be difficult and potentially distracting from the original mission, and more costly. Suzanne said the LAW report is optimistic about the cost of a pretreatment system, and Ecology would be supportive of that if early treatment and vitrification could start. They just need to be cautious of a bad secondary waste stream problem and getting distracted from the WTP.

Committee Discussion

- *Is no pretreatment an option?* Suzanne said she understood that pretreatment was necessary because of the way the LAW facility is designed. Al Boldt thought if

additional shielding was installed, pretreatment may not be necessary and cost would be reduced. Gerry asked if Ecology would ask for an analysis of no pretreatment as a way to lower total system cost; Suzanne and Al will discuss this subject further.

- Suzanne said the bulk vit report looks at operating the plant early, assuming it is a secondary treatment center. Ecology thought bulk vitrification was promising but the cost is increasing. The LAW facility requires a lower level of cesium for worker safety; bulk vit can take a higher level.
- *Isn't bulk vit stalled because it could not meet waste requirements?* Suzanne said it was at a standstill because of planning and losing funding in 2007 and 2008, not because of waste performance issues.
- *When is the drop-dead date for Ecology to state new tanks are needed?* Suzanne said space is dependent on the operational date. She said if the WTP is delayed until 2019, they will need about five more tanks. Retrievals have to continue at a productive pace and running out of space is not a reason to quit retrievals. Ecology is still debating between early treatment and additional tanks.
- How quickly would space open up with WTP online in 2019? Suzanne said with the second LAW facility and WTP up and running, she estimated about two million gallons of space a year would be created. There would be less without the second LAW facility. The liquid secondary waste does not necessarily need to be recycled back to double shell tanks. Ecology's plan is to ask DOE to find another way to solve the secondary waste stream instead of sending it back to the double shell tanks.

Committee Business

- Budgets and Contracts Committee Leadership: Gerry Pollet was the only nominee for Chair and Harold Heacock is the only nominee for Vice-Chair.
- Rick Jansons was the only Tank Waste Committee Chair nominee. Jeff Luke and Rob Davis were nominated for Vice-Chair. They will discuss if either of them wants to step aside, or the committee will vote.
- The committee agreed an August conference call is unnecessary.
- A September meeting will be pushed to October due to HAB budget issues.

Action Items / Commitments

- Dirk Dunning, Rob Davis, and Todd Martin will draft advice on the DST Integrity Report.
- Gerry Pollet and Dirk Dunning will revise the draft WTP path forward advice.

Handouts

- Rob Davis' *Double Shell Tank Integrity Report* analysis and informational document.

Attendees

HAB Members and Alternates

Al Boldt	Susan Leckband	Wade Riggsbee
Shelley Cimon	Jerri Main	Dick Smith
Rob Davis	Todd Martin	John Stanfill
Dirk Dunning	Jerry Peltier	Eugene Van Liew
Harold Heacock	Maynard Plahuta	
Pam Larsen	Gerry Pollet	Jeanie Sedgely (by phone)

Others

Erik Olds, DOE-ORP	Madeleine Brown, Ecology	Kayle Boomer, CH2MHill
	Jeff Lyon, Ecology	P. John Martell, DOH
	Suzanne Dahl, Ecology	Gail Laws, DOH
	Les Fort, Ecology	Lynn Lefkoff, EnviroIssues
	Tom Post, EPA	Hillary Johnson, EnviroIssues